

GRADES 9-12:

Career Field: Standard Engineering and Science Technologies

1:1 Explore careers in Engineering and Science.

PROCEDURE:

In discussion before viewing *Advanced Manufacturing and Materials* the teacher may consider engaging students in discussion on any of the following topics:

- Advanced Materials are materials specially designed for a specific purpose and that do not exist in nature.
- Advanced Manufacturing and Material engineers are degreed professionals.
- Advanced Materials require new systems of manufacture to be developed.
- Manufacturing has changed dramatically over the past 30 years and has seen an increase in use of robotics and new materials developed using nanotechnology.
- Advanced Manufacturing and Materials Engineers rely heavily on skills from the STEM content areas – Science, Technology, Engineering and Math.
- Advanced Manufacturing and Materials Engineering rely heavily on creative thinking skills in order to solve problems.

In discussion after viewing *Advanced Manufacturing and Materials* the teacher may have a follow-up discussion on the same topics discussed before viewing the video.

BEFORE VIEWING:

Distribute the Agree-Disagree chart and the Pre and Post-viewing guide on the following page to provide focused viewing for students while watching the *STEM Career Lab* video, *Advanced Manufacturing and Materials*.

Have each student complete the “Before Viewing” column on the Agree-Disagree Chart and the “What I Already Know” column of the Guided Viewing Worksheet. Let students know it’s okay if they do not know all the answers.

WHILE VIEWING:

Play the *Advanced Manufacturing and Materials* video and instruct students to now fill out the “What I learned” Column. Students will make notes about their impressions of needed skills in science, technology, engineering and math and how they need to prepare to go into a career in Advanced Manufacturing and Materials.

AFTER VIEWING:

Have students complete the “After Viewing” column on the Agree-Disagree Chart. Discuss the changes in their answers, then use the Guided Viewing worksheet to facilitate a post viewing discussion with students.

DIRECTIONS:

Mark whether you agree or disagree with each statement in the left column before viewing the video. After viewing the video, identify whether you agree or disagree with each statement in the right column. Discuss each statement as a group.

<i>Before Viewing</i>	<i>Statement</i>	<i>After Viewing</i>
Agree Disagree	Advanced Manufacturing and Materials field is only for students who excel in STEM subjects.	Agree Disagree
Agree Disagree	Advanced Manufacturing and Materials projects require teams of people with many different skills.	Agree Disagree
Agree Disagree	Advanced Manufacturing and Materials Engineers develop new materials and techniques with which to produce the new materials.	Agree Disagree

	<i>What I Already Know</i>	<i>What I Learned</i>
1. What do Advanced Manufacturing and Materials Engineers do?		
2. What are some of the projects that an Advanced Manufacturing and Materials Engineer can work on?		
3. How would you prepare to become an Advanced Manufacturing and Materials Engineer?		
4. How does chemistry help you in this field of engineering?		
5. What are some of the key STEM topics you should focus on in High School to help prepare for a career in Advanced Manufacturing and Materials?		
6. Why is it necessary to develop new manufacturing methods when a new advanced material is developed?		
7. What are some of the project examples?		
8. How does this field impact people's lives?		